

AIRPAX **DIMENSIONS**

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121585B

OWNER'S MANUAL

FEBRUARY 2007

Airpax Dimensions, Inc.
U.P.S.
Uninterruptable Power Supply
(External Battery Type)

OWNERS MANUAL for Models:

ADI-24/2400N UPS
ADI-24/4800N UPS

Including Option "D"

Form 121585

OWNERS MANUAL FOR AIRPAX DIMENSIONS INVERTERS

Model ADI-24/2400N UPS
Model ADI-24/4800N UPS

Including Options "D"

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1. GENERAL

1.01 Dimensions U.P.S. have been designed and manufactured for many user applications and long life. They utilize patented construction methods and high technology electronic parts and circuitry.

1.02 CAUTION: The U.P.S. produces hazardous voltages, to avoid risk of harm or fire the unit must be properly installed. There are no user serviceable parts inside, do not remove the cover.

CAUTION: The U.P.S. should not be mounted in a location that may be exposed to rain or spray.

CAUTION: The U.P.S. should not be installed in a zero clearance enclosure.

CAUTION: Damage to the U.P.S. will occur if correct polarity is not observed when installing the DC input cables.

CAUTION: Damage to the U.P.S. will occur if an external AC power source is applied to the inverter's AC output or its hardwire output.

CAUTION: The U.P.S. contains a circuit breaker and capacitor that may produce a spark. Do not mount in a confined battery or gas compartment.

CAUTION: Working in the vicinity of lead-acid batteries is dangerous. Batteries generate explosive gases during operation. There is a risk of acid exposure. There is also a risk of high current discharge from shorting the battery that can cause fire and explosion.

CAUTION: Be sure both the U.P.S. and the external AC input circuit breaker or fuse are turned "OFF" during installation.

2. DESCRIPTION

2.01 The U.P.S. converts 24 VDC to 120 VAC, (120/240 VAC with "D" option) 60 HZ, having a pure sine wave form.

2.02 The U.P.S. has internal protection against output short circuit, output overload and high temperature conditions. Also, there is a thermally controlled cooling fan.

2.03 The U.P.S. is designed to operate any 120 VAC, (120/240 VAC with "D" option) 60 HZ single phase appliance, equipment or tool within its power ratings.

2.04 The built in battery charger has a sophisticated, patented recharge detection circuitry to ensure complete battery charging. It is fully automatic and regulated, and is temperature compensated.

U.P.S. Rating				
U.P.S.	Input		Output	
Model	(VDC)	(ADC)	(VAC)	(Watts)
24/2400N	25.2	Up to 120	120	2400
24/4800N	25.2	Up to 240	120	4800

3. INSTALLATION

3.01 The following instructions should be thoroughly read and understood before installation.

3.02 CAUTION: The U.P.S. produces hazardous voltages, to avoid risk of harm or fire the unit must be properly installed.

CAUTION: Damage to the U.P.S. will occur if correct polarity is not observed when installing the DC input cables.

CAUTION: Damage to the U.P.S. will occur if an external AC power source is applied to the inverter's AC outlet or its hardwire output.

CAUTION: Be sure both the U.P.S. and the external AC circuit breaker or fuse (if needed) are turned "OFF" during installation.

NOTE: All wiring must follow the National Electric Code, Provincial or other codes in effect at the time of installation, regardless of suggestions in this manual. All wires should be copper conductors.

3.03 Mounting

3.03.1 Locate a suitable, secure vertical or horizontal mounting surface as close to the battery as possible without being in the same air tight compartment. The maximum recommended distance between the mounting location and the battery is 20 feet.

3.03.2 The location should provide adequate ventilation and clearance to maintain room temperature during operation. At least 1/2 inch of clearance is required on all sides.

3.03.3 Secure the unit with 1/4 inch screws or bolts in the mounting slots on the flanges of the chassis.

3.04 Chassis Bonding Lug - FIG. 1

3.04.1 Connect a #8 gauge or greater copper wire between the bonding lug on the inverter and the earth grounding system.

3.05 Battery Cabling - FIG. 1

3.05.1 CAUTION: Assure that hydrogen gas does not accumulate near the battery by keeping the area well ventilated. A spark may result when connecting the final battery wiring due to the initial

charging of the internal input capacitor.

3.05.2 Use stranded copper wire between the battery and inverter as indicated. A line fuse must be installed between the battery and the inverter. U.L. requires that the fuse be within 18 inches of the battery.

DC Input Wire Lengths (maximum) and Fusing Guide

Model	Distance (feet)	
	1-20	Fuse
24/2400N	2 ga	250A
24/4800N	2/0 ga	400A

3.05.3 NOTE: Using smaller input cable or longer length will greatly degrade the inverter peak performance.

3.05.4 Install the wires at the battery, U.P.S. and then fuse holder. Make sure that good, clean connections are made. Use care not to touch the positive and negative wires together. This will result in a violent spark and could result in exploding batteries and fire.

3.05.5 The battery input terminals are located in the wiring compartment. A mounting spark may result when connecting the battery wire, due to an initial charging of the internal input capacitor.

3.05.6 CAUTION: Connecting the U.P.S. incorrectly to the battery will cause damage that is not covered under warranty.

3.06 Remote Switch for Inverter Operation - Fig. 1

3.06.1 All material used for the remote switch should be U.L. listed and installed per low voltage, Class 2, wiring code.

3.06.2 A remote switch may be connected to the violet wire marked "Remote Switch Hookup" in the wiring compartment. You should first remove this violet wire from the battery positive input terminal; then connect the violet wire to the load

terminal of the switch. The input terminal of the switch should be connected to 5 Amp. fused +24 VDC. The cable clamp strain relief should be used to secure the field wires.

3.06.3 The switch should be mounted at a convenient location in a listed outlet box with approved strain relief.

3.06.4 NOTE: A remote switch, if installed, will operate **only if** the local On/Off switch on the face of the U.P.S. is turned "On". You may use several switches or relays in parallel in lieu of one remote switch.

3.07 Remote Temperature Sense

3.07.1 CAUTION: Failure to connect the remote temperature sense probe correctly will result in improper battery charging.

3.07.2 A 10 foot long cable with temperature sense probe is provided with the unit. This allows the unit to know the exact battery temperature for correct operation of the temperature compensated circuitry. This changes the output voltage as required by the battery at a given temperature.

3.07.3 Install the probe end on a NEGATIVE battery terminal post.

3.08 120 VAC Output (120/240 VAC with "D" option)

3.08.1 CAUTION: Do not connect another source of AC power directly to the output of the U.P.S. This will result in damage to the inverter that is not covered under warranty!

3.08.2 The 120 VAC output of the U.P.S. is provided at the receptacle outlet on the inverter.

3.08.3 The output is also presented behind the wiring compartment panel for direct hardwire wire leads. The black wire is hot (2 black hot wires with "D" option), the white wire is neutral and the green wire is ground. The cable clamp strain relief should be used to secure the field wires.

3.08.4 The remote AC outlets should be mounted at a convenient location in a listed outlet box with approved strain relief.
inverter.

3.09 120 VAC Input (120/240 VAC with "D" option)

3.09.1 120 VAC (120/240 VAC with "D" option), 60HZ power from the electric utility or generator can be connected to the U.P.S. with hardwire connections at the AC Input wire leads provided in the hardwire compartment. The black wire is hot (2 black hot wires with "D" option), the white wire is neutral, and the green wire is ground. The cable clamp strain relief should be used to secure the field wires.

3.09.2 The input circuit should have 20 amp circuit protection from the distribution panel.

3.09.3 When external AC is supplied, the internal transfer switch is automatically activated, the inverter is turned "Off", and the U.P.S. loads will operate from external AC input.

3.09.4 The unit has a separate 120 VAC (240 VAC with "D" option), 20 amp second input circuit. The first circuit activates the internal transfer switch supplying utility or generator power to the U.P.S. output loads, and turns "Off" the inverter. The second circuit activates the battery charger and also turns "Off" the inverter. Both the transfer switch input and the battery charger input must be at the same phase.

4. START UP / OPERATION

4.01 The battery charger will operate anytime that there is external AC power and the battery is not 100% charged. The status lights will indicate that there is external power and the battery's condition.

4.02 There are two switches on the right side that should be set.

4.03 The switch labeled "Battery Type" should be set to the correct setting based on the composition of the batteries attached to the inverter. Use the following table to determine the correct setting.

BATTERY TYPE SELECTION

<u>SETTING</u>	<u>BATTERY TYPE</u>
A	Vented Nickel-Cadium 10 cells
B	Vented Lead-Acid (Antimony) Flooded Electrolyte
C	Sealed Lead-Acid Absorbed or Vented Nickel-Cadium 9 cell
D	Sealed Lead-Acid Gelled

NOTE: Used batteries should be put through 5 charge cycles with the switch set one position lower (to the right) than desired. Example: Start a used vented-lead acid battery on the "C" setting.

4.04 The switch labeled "Battery Size" should be set to the correct setting based on the total amp hour capacity of the batteries attached to the inverter. Use the following table to determine correct setting.

BATTERY CAPACITY SELECTOR

<u>SETTING</u>	<u>AMP HOUR CAPACITY</u>
A	Over 600
B	600 - 400
C	400 - 200
D	Less than 200

4.05 To operate the U.P.S., turn the On/Off switch to "ON". Assure that the output breakers are reset. If a remote switch is used, the inverter is turned "On" or "Off" by the remote switch.

BATTERY CHARGER RATING

<u>U.P.S.</u>	<u>Input Current</u>	<u>Output Current</u>
<u>Model</u>	<u>@ 120VAC, 60Hz</u>	<u>@ 24VDC</u>
24/2400N	Up to 20 Amp AC	40 Amp DC
24/4800N	Up to 40 Amp AC	105 Amp DC

5. CUSTOMER SERVICE TROUBLESHOOTING

5.01 Dimensions offers free phone consultation concerning installation or troubleshooting. Call the Customer Service Department at: 1-800-553-6418 or 651-653-7000
fax: 1-651-653-7600
e-mail: inverterinfo@Airpax.net

5.02 If the U.P.S. fails to operate, use the following troubleshooting procedure.

5.02.1 Connect a 100 watt light bulb to the inverter output.

5.02.2 Make sure that the U.P.S. is turned "On", and the circuit breakers are reset.

5.02.3 Check the connection to the remote switch, if used. +24VDC **must** be present at the violet wire for the unit to operate. If not, check any fuses in the remote switch circuit.

5.02.4 Observe the fault indicating lights on the front of the inverter.

a) The Low input voltage light indicates a low battery condition. Switch the U.P.S. "Off" for 5 seconds, then "On" again. The light coming on again indicates a fault in the battery wiring, battery capacity and voltage or the line fuse.

b) The Overload light indicates an output wiring short circuit or a load that is too large for the power rating of the U.P.S.. Switch the inverter "Off", remove the short circuit or excessive load from the output, then switch the inverter back "On".

c) The High temperature light indicates the U.P.S. has overheated. The unit will automatically turn back on when it has cooled to 40°C. Verify that the U.P.S. is not in a closed compartment and that the fan is not blocked.

5.03 When the battery charger fails to operate correctly check the U.P.S. trouble shooting procedure in 5.02, assure that the remote temperature probe is installed correctly, then observe the front panel lights:

a) The external power light should be lit, if not, verify that the external power circuit is providing correct AC power to the unit. Check all external power wiring and external circuit breakers or fuses.

b) The green Timer Complete light indicates the unit's battery charger was unable to completely charge the batteries during the 12 hour charge cycle. One or more of the following conditions can cause this condition.

1) Verify that the two switch settings ("BATTERY TYPE" and "BATTERY BANK SIZE") are correctly set.

2) The charger was unable to detect the 80% charge level point during the 12 hour cycle due to a defective battery.

3) The battery's voltage dropped below 25.2 volts while the charger was attempting to detect the 80% charge level. A battery with a shorted cell or incorrect acid density can cause this condition.

4) More than 20 Amps of DC load current was drawn directly from the batteries during the charge cycle.

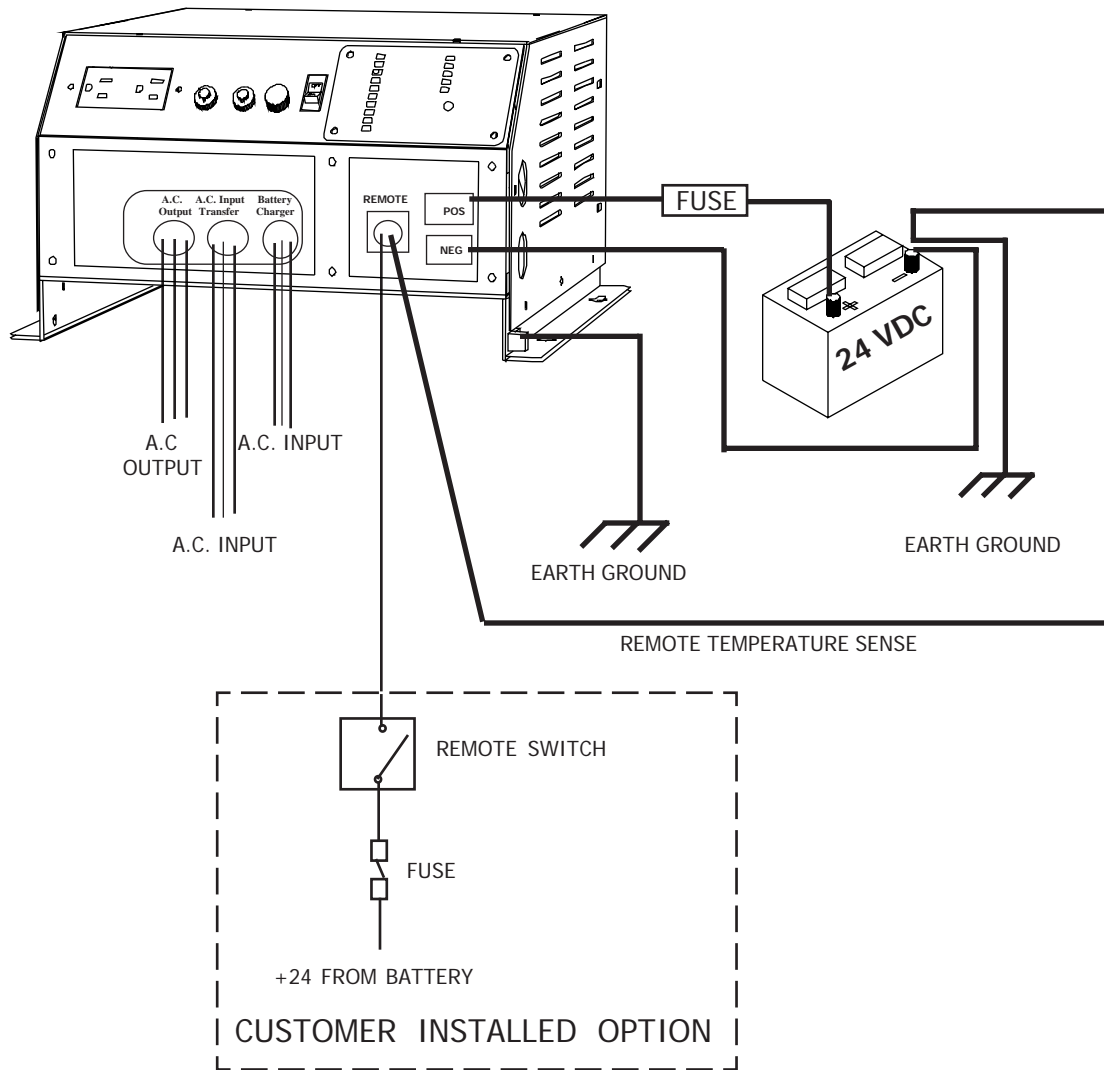
5) AC power loss (brown out) in the external AC input that limited the amount of AC power available to the battery charger.

5.04 A new charge cycle may correct the Timer Complete condition if the cause seems to be conditions 1, 4, or 5. The new charge cycle can be started by disconnecting both external AC inputs for 5 seconds then reconnecting them.

5.05 Call Airpax Dimensions, Inc. for technical assistance and/or a Return Authorization Number if the above steps are completed and the U.P.S. or battery charger will not operate satisfactorily.

FIG. 1 INSTALLATION WIRING

WARNING: CONNECTING THE BATTERY WITH THE WRONG POLARITY TO THE U.P.S WILL CAUSE DAMAGE THAT IS NOT COVERED UNDER THE WARRANTY.



Limited Warranty Terms & Conditions

SHIPPING TERMS

F.O.B. St. Paul Minnesota - USA

LOSS OR DAMAGE

Loss or damage in transit is the responsibility of the carrier. Any claim should be filed with the delivering transport company. Invoice, Bill of Lading and Delivery receipt with damage noted therein must accompany any claims for freight damage. Claims for shortage and lost shipments must be made in writing to Airpax Dimensions, St. Paul, MN within 10 days of date of shipment. Claims not reported within this time frame will not be honored.

RETURN GOODS POLICY

- No returned materials will be accepted without an accompanying Returned Materials Authorization Number (RMA) from the factory.
- Credit will be issued for returned goods to the original purchaser within 60 days of purchase, provided the inverter is returned to Dimensions unused and not mounted. The amount of credit will be issued at Dimensions discretion based on the condition of the product.
- Customer must be in good standing with Dimensions.
- Inverters that are discontinued, high-voltage (over 24vdc), special-order or used are excluded and will not be eligible for credit. Non-inverter items such as cable assemblies, fuses and fuse holders, will not be eligible for credit
- Support components supplied by Dimensions vendors will be covered under that manufacturer's credit return policy.
- Customer pays return freight.

PLEASE SHIP AUTHORIZED RETURNS TO: Airpax Dimensions, Inc. / 4467 White Bear Parkway / St. Paul, MN 55110
Return Freight Prepaid

LIMITED WARRANTY

Airpax Dimensions, Inc. extends the following warranty to the original purchaser of those goods subject to the qualifications indicated.

Dimensions warrants to the original purchaser for use that the goods or any component thereof manufactured by Dimensions will be free from defects in workmanship for a period of 1 year from the date of purchase, provided such goods are installed, maintained and used in accordance with Dimensions and the original manufacturer's written instructions.

Components not manufactured by Dimensions, but used within the assembly provided by Dimensions, are subject to the warranty period as specified by the individual manufacturer of said component, provided such goods are installed, maintained and used in accordance with Dimensions and the manufacturer's written instructions.

Dimensions sole liability and the Purchaser's sole remedy for a failure of goods under this limited warranty and for any and all claims arising out of the purchase and use of the goods, shall be limited to the repair or replacement of the goods that do not conform to this warranty.

To obtain repair or replacement service under the limited warranty, the purchaser must contact the factory for a Return Material Authorization (RMA). Once obtained, send the Return Material Authorization Number along with the defective part or goods to: Airpax Dimensions, Inc., 4467 White Bear Parkway, St. Paul, MN 55110, freight prepaid.

THERE ARE NO EXPRESS WARRANTIES COVERING THESE GOODS OTHER THAN AS SET FORTH ABOVE. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO ONE YEAR FROM DATE OF PURCHASE.

DIMENSIONS ASSUMES NO LIABILITY IN CONNECTION WITH THE INSTALLATION OR USE OF THE PRODUCT, EXCEPT AS STATED IN THIS LIMITED WARRANTY. DIMENSIONS WILL IN NO EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

WARNING: LIMITATIONS ON USE

Dimensions products are not intended for use in connection with Life Support Systems and for Avionic use. Dimensions makes no warranty or representation in connection with their products for such uses.